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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/822,440  
Filing Date: April 12, 2004  
Appellant(s): CHOI ET AL.

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Robert Walat  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 4/28/2009 appealing from the Office action mailed 5/16/2008.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

No amendment after final has been filed.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The examiner has withdrawn the 35 U.S.C. 112, first paragraph, rejection.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

WO 01/43850	PIERCE	6-2001
6,291,552	DONG	9-2001
4,102,785	HEAD	7-1978
6,749,753	YAMAGUCHI	6-2004
6,420,024	PEREZ	7-2002

**(9) Grounds of Rejection**

The following grounds of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 13-14 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong.**

Pierce discloses a nonwoven filter media comprising a layer of glass wool fibers combined with chopped glass fibers (see entire document including page 2, lines 23-25). Pierce discloses that the chopped glass fibers may be present in the range of about 5 to 40% by weight and that the glass wool fibers may be present in the range of about 60 to 95% by weight (page 2, lines 27-29). Pierce discloses that the glass wool fibers may have a diameter in the range of 0.1 to 5.0 microns (page 6, lines 12-14). Pierce discloses that the chopped glass fibers may have a diameter in the range of 5.0 to 9.0 microns (page 7, lines 22-24). Pierce discloses that the filter media may be a wet laid filter media (page 14, lines 17-18). Pierce discloses that the number of plies can vary from approximately 1 to 10 plies (page 10, lines 30-31). Therefore, the top ply can be considered to read on the claimed filtration layer and one or more underlying plies can be considered to read on the claimed support layer.

Pierce does not mention gamma values, but Pierce does disclose that a dispersant may be added to the slurry (page 12, line 1 to page 13, 5) and that the resulting slurry may have a pH of

about 2.2 to about 3.2 (page 15, lines 7-17). Pierce does not appear to mention raising the pH of the nonwoven glass layer during the wet laid process after the dispersant is added, but Dong discloses that it is known in the wet laid nonwoven glass art to form a glass fiber nonwoven with uniform weight by first contacting the glass fibers with the combination of a charged viscosity modifier and a dispersant followed by the separate addition of an oppositely charged viscosity modifier, resulting in a slurry with a pH in the range of from about 5 to about 10 (see entire document including column 2, lines 20-43 and column 6, lines 58-64). It would have been obvious to one having ordinary skill in the art at the time the invention was made to raise the pH from a low pH value, as taught by Dong, because the nonwoven filter media would advantageously possess a uniform weight.

Regarding the claimed gamma value, considering that the nonwoven filter media taught by the applied prior art is substantially identical to the claimed nonwoven filter media in structure and considering that the nonwoven filter media taught by the applied prior art is made by a substantially identical wet laid process (lowering the pH and then raising the pH), it appears that the nonwoven filter media inherently possesses the claimed gamma value.

The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to

obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

Regarding claim 14, Pierce discloses that the glass wool fibers of each ply may have a diameter in the range of 0.1 to 5.0 microns (page 6, lines 12-14).

Regarding claims 19 and 20, Pierce discloses that the glass wool fibers may be combined with chopped glass fibers forming a filtration layer (see entire document including page 2, lines 23-25).

Regarding claim 20, Pierce discloses that the chopped glass fibers may be present in the range of about 5 to 40% by weight and the glass wool fibers may be present in the range of about 60 to 95% by weight (page 2, lines 27-29).

**3. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong as applied to claims 13-14 and 19-20 above, and further in view of USPN 4,102,785 to Head.**

Pierce does not appear to mention the apparent density of the web, therefore, it would have been obvious to look to the prior art for conventional web densities. Head provides this conventional teaching showing that it is known in the filter art to use a fiber density of about 0.15 to 0.25 g/cc (see column 4, lines 52-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the filter media with a fiber density of 0.15 to 0.25 g/cc, as taught by Head, motivated by the expectation of successfully practicing the invention of Pierce.

**4. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong as applied to claims 13-14 and 19-20 above, and further in view of USPN 6,749,753 to Yamaguchi.**

Pierce discloses that the number of plies can vary from approximately 1 to 10 plies (page 10, lines 30-31). Therefore, the top ply can be considered to read on the claimed filtration layer and one or more underlying plies can be considered to read on the claimed support layer. Pierce does not appear to mention using a larger fiber diameter in one of the supporting plies, but Yamaguchi discloses that it is known in the filtration art to vary the fiber diameter of adjacent plies to increase filtration accuracy and increase filtration life (see entire document including column 2, lines 29-44). Yamaguchi discloses that the larger fibers may have a diameter of 1.1 to 20 times as large as the smaller diameter (column 6, lines 38-49). Considering that Pierce discloses that the glass wool fibers of each ply may have a diameter in the range of 0.1 to 5.0 microns (page 6, lines 12-14), it would have been obvious to use fibers with a diameter of 0.69 microns in one ply and fibers with a diameter of 4.2 microns in at least one of the supporting plies, because the filter would possess increased filtration accuracy and increased filtration life.

**5. Claims 1-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong in view of USPN 6,420,024 to Perez.**

Pierce discloses a nonwoven filter media comprising a layer of glass wool fibers combined with chopped glass fibers (see entire document including page 2, lines 23-25). Pierce discloses that the chopped glass fibers may be present in the range of about 5 to 40% by weight

and that the glass wool fibers may be present in the range of about 60 to 95% by weight (page 2, lines 27-29). Pierce discloses that the glass wool fibers may have a diameter in the range of 0.1 to 5.0 microns (page 6, lines 12-14). Pierce discloses that the chopped glass fibers may have a diameter in the range of 5.0 to 9.0 microns (page 7, lines 22-24). Pierce discloses that the filter media may be a wet laid filter media (page 14, lines 17-18).

Pierce does not mention gamma values, but Pierce does disclose that a dispersant may be added to the slurry (page 12, line 1 to page 13, 5) and that the resulting slurry may have a pH of about 2.2 to about 3.2 (page 15, lines 7-17). Pierce does not appear to mention raising the pH of the nonwoven glass layer during the wet laid process after the dispersant is added, but Dong discloses that it is known in the wet laid nonwoven glass art to form a glass fiber nonwoven with uniform weight by first contacting the glass fibers with the combination of a charged viscosity modifier and a dispersant followed by the separate addition of an oppositely charged viscosity modifier, resulting in a slurry with a pH in the range of from about 5 to about 10 (see entire document including column 2, lines 20-43 and column 6, lines 58-64). It would have been obvious to one having ordinary skill in the art at the time the invention was made to raise the pH from a low pH value, as taught by Dong, because the nonwoven filter media would advantageously possess a uniform weight.

Regarding the claimed gamma value, considering that the nonwoven filter media taught by the applied prior art is substantially identical to the claimed nonwoven filter media in structure and considering that the nonwoven filter media taught by the applied prior art is made by a substantially identical wet laid process (lowering the pH and then raising the pH), it appears that the nonwoven filter media inherently possesses the claimed gamma value.



Pierce appears to be silent with regards to a specific surface area, therefore, it would have been obvious to look to the prior art for conventional surfaces areas. Perez provides this conventional teaching showing that it is known in the filtration art to use a surface area of greater than  $0.25 \text{ m}^2/\text{g}$ , typically about  $0.5$  to  $30 \text{ m}^2/\text{g}$  (see column 2, lines 8-21). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the surface area from about  $0.5$  to  $30 \text{ m}^2/\text{g}$ , motivated by the expectation of successfully practicing the invention of Pierce.

Regarding claims 2-3, 9-10 and 14, Pierce discloses that the glass wool fibers of each ply may have a diameter in the range of  $0.1$  to  $5.0$  microns (page 6, lines 12-14).

Regarding claims 4-6 and 19-20, Pierce discloses that the glass wool fibers may be combined with chopped glass fibers forming a filtration layer (see entire document including page 2, lines 23-25).

Regarding claims 6 and 20, Pierce discloses that the chopped glass fibers may be present in the range of about  $5$  to  $40\%$  by weight and the glass wool fibers may be present in the range of about  $60$  to  $95\%$  by weight (page 2, lines 27-29).

Regarding claims 7 and 11, Pierce discloses that the filter media may be a wet laid filter media (page 14, lines 17-18).

Regarding claims 8-12 and 16-17, Pierce does not appear to mention the apparent density of the web, but considering that the nonwoven filter media taught by the applied prior art possesses an identical surface area and is made with an identical wet laid process producing a substantially uniform web, it appears that the apparent density of the web is inherently at least about  $0.15 \text{ g/cc}$ .

Regarding claims 13-17 and 19-20, Pierce discloses that the number of plies can vary from approximately 1 to 10 plies (page 10, lines 30-31). Therefore, the top ply can be considered to read on the claimed filtration layer and one or more underlying plies can be considered to read on the claimed support layer.

**6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong in view of USPN 6,420,024 to Perez as applied to claims 1-17 and 19-20 above, and further in view of USPN 6,749,753 to Yamaguchi.**

Pierce discloses that the number of plies can vary from approximately 1 to 10 plies (page 10, lines 30-31). Therefore, the top ply can be considered to read on the claimed filtration layer and one or more underlying plies can be considered to read on the claimed support layer. Pierce does not appear to mention using a larger fiber diameter in one of the supporting plies, but Yamaguchi discloses that it is known in the filtration art to vary the fiber diameter of adjacent plies to increase filtration accuracy and increase filtration life (see entire document including column 2, lines 29-44). Yamaguchi discloses that the larger fibers may have a diameter of 1.1 to 20 times as large as the smaller diameter (column 6, lines 38-49). Considering that Pierce discloses that the glass wool fibers of each ply may have a diameter in the range of 0.1 to 5.0 microns (page 6, lines 12-14), it would have been obvious to use fibers with a diameter of 0.69 microns in one ply and fibers with a diameter of 4.2 microns in at least one of the supporting plies, because the filter would possess increased filtration accuracy and increased filtration life.

**7. Claims 8-12 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong in view of USPN 6,420,024 to Perez as applied to claims 1-17 and 19-20 above, and further in view of USPN 4,102,785 to Head.**

In the event that it is shown that the apparent density of the web is not inherently about 0.15 to 0.21 g/cc, Head discloses that it is known and typical in the filter art to use a fiber density of about 0.15 to 0.25 g/cc (see column 4, lines 52-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the filter media with a fiber density of 0.15 to 0.25 g/cc, as taught by Head, because it is understood by one of ordinary skill in the art that the apparent density effects a property such as filtration efficiency and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

### **(10) Response to Argument**

#### Prosecution History

Throughout prosecution the examiner wholeheartedly attempted to search the prior art for a nonwoven produced by the same method taught by the appellant to inherently teach the claimed gamma value limitation. Unfortunately, the appellant has made contradictory statements that may have thwarted the examiner from properly examining the application for patentability because it is no longer clear how the claimed gamma value is obtainable.

Beginning with the very first office action (mailed 5/23/2006), and up until the last office action (5/16/2008), the examiner cited Pierce as teaching a nonwoven filter material similar to that disclosed by the current specification but formed with a slurry pH of about 2.2 to about 3.2. The examiner also cited Dong to disclose that it is known in the wet laid nonwoven glass art to increase a slurry pH to within the range of about 5 to about 10.

In the very first response by appellant (filed 8/28/2006), and up until the filing of an appeal brief, the appellant clearly and continuously asserted that although Dong taught a slurry pH of about 5 to about 10, Dong failed to teach or suggest a two-step pH adjustment of the fiber slurry (first lowering the pH and then raising the pH). Said assertion was the basis for appellant's continuously repeated argument that the applied prior art failed to teach or suggest a nonwoven web that inherently possesses the claimed gamma value. The appellant asserted that the pH of a fiber slurry had to be first lowered and then raised for the resulting nonwoven to inherently possess the claimed gamma value. A glance at the file history clearly indicates that the appellant held this position up until the appeal brief. For example:

1) On pages 5 and 6 of the response filed 8/28/2006 the appellants asserted “The claimed Gamma value recited in claim 13 is obtained by forming a slurry having an acidic pH, and then *adjusting* the pH to a neutral or alkaline pH. The pH disclosed by Dong is merely the pH of the slurry. Dong does not suggest that the pH is ever adjusted. Accordingly, Dong fails to remedy the deficiencies of Pierce, and thus the combination of references does not teach a filter media that inherently has the claimed gamma value.”

2) On page 2 of the response filed 11/13/2006 the appellants asserted “The specification makes it clear that the claimed gamma value, as well as the surface area and apparent density, are obtained as a direct result of adjusting the pH from an acidic pH to a neutral pH during the formation of the filter media.”

3) On page 3 of the response filed 11/13/2006 the appellants asserted “Accordingly, the specification clearly shows that the claimed gamma value, surface area, and apparent density are a direct result of adjusting the pH of a slurry from an acidic pH to a neutral pH. Thus, in order for the cited references to inherently teach the claimed gamma value, surface area, and apparent density, the references must teach a filter media that is formed from a slurry of glass wool fibers having a pH that is adjusted from an acidic pH to a neutral pH.”

4) On page 4 of the response filed 11/13/2006 the appellants asserted “As explained above, Applicant's specification makes it clear that the claimed Gamma value is obtained by forming a slurry having an acidic pH, and then *adjusting* the pH to a neutral or alkaline pH. Since Dong fails to teach or even suggest adjusting the pH, Dong fails to remedy the deficiencies of Pierce, and thus the combination of references does not teach a filter media that inherently has the claimed gamma value.”

5) On page 1 of the response filed 3/7/2007 the appellants asserted "In a telephone interview with the Examiner on February 12, 2007, the Examiner agreed that a declaration showing that the claimed gamma value is a direct result of adjusting the pH of a slurry during formation of a filter media would be sufficient to overcome the pending rejections. Applicant therefore submits herewith a 1.132 Declaration of Wai Ming Choi. The declaration includes experimental data that shows that a filter media formed from a slurry *without* adjusting the pH does *not* have a gamma value of at least about 14, as compared to the data in Example 1 of the pending application which illustrates that adjusting the pH produces a filter media having a gamma value of at least about 14. The data in the attached Declaration, when compared to the data in Example 1 of the pending application, thus conclusively proves that adjusting the pH of the slurry is a direct result of the claimed gamma value. The references relied on by the Examiner to reject the pending claims therefore cannot inherently teach the claimed gamma value because they do not teach a filter media that is formed from a slurry of glass wool fibers having a pH that is adjusted from an acidic pH to a neutral pH."

6) In paragraph 5 of the declaration filed 3/7/2007 the inventor asserted "I unexpectedly discovered that adjusting the pH from an acidic pH to a neutral pH during formation of the filter media resulted in a filter media having a gamma value of at least about 14. In particular, the pH is adjusted by first adding an acidic agent to a slurry containing glass wool fibers, since glass wool fibers are anionic by nature. The acidic pH is then adjusted by adding a neutral or alkaline pH adjusting agent to the slurry to bring the pH to a range of about 6 to 12. I discovered that this additional step of adding a neutral or alkaline pH adjusting agent to the

slurry unexpectedly produces a nonwoven glass web having improved filtration properties, and in particular having a gamma value of at least about 14.”

7) In paragraph 7 of the declaration filed 3/7/2007 the inventor asserted “The following Example A further proves that a gamma value of at least about 14 can only be obtained by adjusting the pH of the slurry first to an acidic pH, and then to a neutral or alkaline pH.”

8) On page 2 of the response filed 6/7/2007 the appellants asserted “Accordingly, Example 1 does in fact show that both steps (1) (adding an acidic adjusting agent) and (2) (adding a neutral or basic adjusting agent) mentioned above were performed, and thus the combination of steps is necessary to achieve the claimed gamma value.”

9) On page 1 of the response filed 10/4/2007 the appellants asserted “Applicants specification clearly teaches, in paragraphs 0023 and 0024, that the gamma of 14 is obtained by first adding an acidic adjusting agent to the slurry, and then adding a neutral or alkaline pH adjusting agent, and thus the examples in the Supplemental Declaration are submitted to merely support this assertion.”

10) In paragraph 5 of the declaration filed 10/4/2007 the inventor asserted “I unexpectedly discovered that adjusting the pH to an acidic pH, and then to a neutral pH during formation of the filter media resulted in a filter media having a gamma value of at least about 14, as explained in paragraphs 0023 and 0024 of the present application. In particular, the pH is adjusted by first adding an acidic agent to a slurry containing glass wool fibers, since glass wool fibers are anionic by nature. The acidic slurry is then adjusted by adding a neutral or alkaline pH adjusting agent to the slurry to bring the pH to a range of about 6 to 12. I discovered that this

additional step of adding a neutral or alkaline pH adjusting agent to an acidic slurry unexpectedly produces a nonwoven glass web having improved filtration properties, and in particular having a gamma value of at least about 14.”

**11) In paragraph 6 of the declaration filed 10/4/2007 the inventor asserted “The following examples prove that a gamma value of at least about 14 can only be obtained by performing two steps: (1) adjusting the pH of the slurry first to an acidic pH, and (2) then adjusting the pH to a neutral or alkaline pH.”**

As shown above, the appellant not only filed office action responses that clearly asserted that a two-step pH adjustment was critical and essential to the invention, but the appellant also submitted multiple signed declarations clearly asserting that a two-step pH adjustment was critical and essential to the invention. The appellant even held multiple interviews with the examiner wherein the crux of the interviews was to convince the examiner that a two-step pH adjustment was critical and essential and not taught by the applied prior art. In response to said repeated assertion the examiner rejected the claims under 35 U.S.C. 112, first paragraph, as lacking said critical and essential feature. Inexplicably, the appellant now asserts in the appeal brief for the first time that a two-step pH adjust adjustment is not necessary to obtain the claimed gamma value. If a two-step pH adjustment is not critical or essential to the practice of the invention it is not clear why the appellant repeatedly and continuously made misleading statements that contradict the new assertion that a two-step pH adjustment is not critical or essential to the practice of the invention.



In the footnote on page 7 of the appeal brief the appellant asserts that previous arguments “admittedly appear to indicate that adjusting the pH is critical” but assures the court that this is not the case as allegedly evidenced by Example 2 of the application. The examiner respectfully disagrees. Firstly, said previous arguments do not simply “appear” to indicate that a two-step pH adjustment is critical. Rather, said arguments clearly admit that said pH adjustment is critical (see above). Secondly, regarding Example 2 of the specification, the appellant takes the position that the pH is never adjusted because pH adjusting agents are not explicitly mentioned in the Example. The examiner respectfully disagrees. Although Example 2 does not explicitly state the inclusion of pH adjusting agents, Example 2 fails to explicitly state that pH adjusting agents were excluded. To the contrary, in the response filed 6/7/2007 (page 2) the appellant disclosed that while Example 1 does not explicitly state that an acid was also added to the pH, an acid was actually added to the slurry prior to adding a base and that both steps 1) adding an acidic adjusting agent and 2) adding a neutral adjusting agent, is necessary to achieve the claimed gamma value. Therefore, the appellant clearly disclosed in the response filed 6/7/2007 that although a pH adjusting agent may not be explicitly mentioned in a specification example it is necessarily present.

In the footnote on page 8 of the appeal brief the appellant asserts that the statement in paragraph 6 of the second declaration (filed 10/4/2007) is “potentially misleading” but that the very next paragraph of said declaration explains how a gamma value of greater than 14 can be obtained without adjusting the pH at all. The examiner respectfully disagrees. Firstly, said disclosure is not “potentially misleading.” Said passage is clear and absolute. Said passage clearly discloses that “a gamma value of at least about 14 can only be obtained by performing two steps: (1) adjusting the pH of the slurry first to an acidic pH, and (2) then adjusting the pH to a neutral or alkaline pH.” Said passage clearly states that the “only” way to obtain a gamma value of at least 14 is by adjusting the pH. No reasonable interpretation of said passage teaches or suggests that a gamma value of at least 14 can be obtained without adjusting the pH at all. Secondly, said declaration was submitted (see page 2 of the response filed 10/4/2007) for the precise purpose of convincing the examiner that the claimed gamma value can only be obtained by adjusting the pH. Thirdly, the very next paragraph (Example A) of the declaration does not explain how a gamma value of greater than 14 can be obtain without adjusting the pH at all. To the contrary, Example A clearly discloses that sulfuric acid (pH reducing agent) is added to water that has an initial pH of 6.0 and then said sulfuric acid slurry is added to a handset mold to obtain a final pH.

In the footnote on page 8 of the appeal brief the appellant also asserts that the statement in paragraph 7 of the first declaration (filed 3/7/2007) is also “potentially misleading” but that Example 1 of the specification was reproduced in said declaration without performing the pH adjusting steps. The examiner respectfully disagrees. Firstly, said disclosure is not “potentially misleading.” Said passage is clear and absolute. Said passage clearly discloses that “The following Example A further proves that a gamma value of at least about 14 can only be obtained by adjusting the pH of the slurry first to an acidic pH, and then to a neutral or alkaline pH.” Said passage clearly states that the “only” way to obtain a gamma value of at least 14 is by adjusting the pH. No reasonable interpretation of said passage teaches or suggests that a gamma value of at least 14 can be obtained without adjusting the pH at all. Secondly, said declaration was submitted (see pages 1 and 2 of the response filed 3/7/2007) for the precise purpose of convincing the examiner that the claimed gamma value can only be obtained by adjusting the pH. Thirdly, the applicant suggests that said reproduction of Example 1 without a pH adjusting step resulted in a gamma value of at least 14. To the contrary, said declaration teaches that reproducing Example 1 without a pH adjusting step only results in pH values of less than 14.

Claims 13-14 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong.

The appellant asserts that the third declaration (filed 3/14/2008) demonstrates that the Pierce/Dong combination would never inherently result in a nonwoven with a gamma value of at least 14 because Pierce teaches the use of essentially boron free glass fibers. The examiner respectfully disagrees.

Firstly, even assuming that the declaration shows that the use of essentially boron free glass fibers always results in a nonwoven with a gamma value below 14 (which it does not), appellant's argument is still not persuasive. There is still motivation for one skilled in the art to use conventional boron glass fibers and the appellant does not dispute that the use of said conventional boron glass fibers would inherently result in the claimed gamma value.

Although Pierce discloses that essentially boron free filtration media is preferred in environments where temperature and humidity are strictly controlled and the release of boron based contaminants must be limited (page 2, lines 13-22), the problem motivating the patentee (Pierce) may be only one of many addressed by the patent's subject matter. The question is not whether the invention was obvious to the patentee but whether the invention was obvious to a person with ordinary skill in the art. Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed. *KSR v. Teleflex*. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the glass fibers from any suitable fibrous material, such as conventional boron glass fibers (see page 1, lines 11-22 of Pierce), because some applications do not require essentially boron free

filtration and because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability and desired characteristics. *In re Leshin*, 125 USPQ 416.

The substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958). When a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result. *KSR v. Teleflex*.

Secondly, Example A of the declaration is clearly irrelevant to the Pierce/Dong rejections because it does not include a pH adjusting agent whereas Dong discloses that it is known in the art to adjust the pH from about 5 to about 10. Although Example B is relevant to the Pierce/Dong rejection because it includes a pH adjustment agent, the declaration fails to teach or suggest that the use of low boron glass fibers has a direct effect on the gamma value. Rather, the declaration simply discloses that nonwoven filters with gamma values of less than 14 can be constructed with at least one specific combination of low boron glass fibers (23.8% OC Advantex, 4.0% Evanite 804, 28.8% Lauscha, 16% Evanite, and 27.4% Lauscha). This result is not unexpected because the current specification already discloses that nonwoven filters with gamma values of less than 14 can be constructed. Therefore, Example B does not teach or suggest that boron free glass fibers affect gamma value differently than conventional boron glass fibers or that a gamma value of at least 14 is not obtainable with low boron glass fibers.

Since the appellant has failed to teach or suggest that low boron glass decreases gamma value compared to the use of conventional boron glass, the nonwoven taught by the applied prior art is substantially identical to the claimed nonwoven in structure and is made by a substantially identical wet laid process (lowering the pH and then raising the pH). In addition, Pierce discloses that one skilled in the art desires a low penetration and low pressure drop (page 10, lines 18-24). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the fiber materials (different fiber compositions and/or fiber percentages and/or diameters) to obtain the currently claimed gamma value, motivated by a desire to increase filtration performance.

The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

Thirdly, if a two-step pH adjustment is not critical to the practice of the invention then the appellant clearly made false declaration statements. For example, in paragraph 7 of the declaration filed 3/7/2007 the inventor asserted "The following Example A further proves that a gamma value of at least about 14 can only be obtained by adjusting the pH of the slurry first to an acidic pH, and then to a neutral or alkaline pH." In addition, in paragraph 6 of the declaration filed 10/4/2007 the inventor asserted "The following examples prove that a gamma value of at least about 14 can only be obtained by performing two steps: (1) adjusting the pH of the slurry first to an acidic pH, and (2) then adjusting the pH to a neutral or alkaline pH." Therefore, it is not clear that the information in the declaration filed 3/14/2008 is reliable.

The appellant asserts that the examiner provides no motivation to combine the references. The examiner respectfully disagrees. Pierce discloses that a dispersant may be added to the slurry (page 12, line 1 to page 13, 5) and that the resulting slurry may have a pH of about 2.2 to about 3.2 (page 15, lines 7-17). Pierce does not appear to mention raising the pH of the nonwoven glass layer during the wet laid process after the dispersant is added, but Pierce does disclose that a high tensile strength is desired (page 13, line 21 through page, 14, line 11). Dong discloses that it is known in the wet laid nonwoven glass art to form a glass fiber nonwoven with uniform weight by first contacting the glass fibers with the combination of a charged viscosity modifier and a dispersant followed by the separate addition of an oppositely charged viscosity modifier, resulting in a slurry with a pH in the range of from about 5 to about 10 and a nonwoven web with improved tensile strength, improved tear strength, and uniform weight (see entire document including column 1, lines 50-57, column 2, lines 20-43 and column 6, lines 58-64). It would have been obvious to one having ordinary skill in the art at the time the invention was

made to raise the pH from a low pH value, as taught by Dong, because the nonwoven filter media would advantageously possess an improved tensile strength, improved tear strength, and uniform weight.

In response, the appellant asserts that the filaments of Dong are coated with a sizing agent and thus require a viscosity modifier but that the filaments of Pierce do not include a sizing agent and therefore no motivation exists to add a viscosity modifier. The examiner respectfully disagrees. Firstly, Pierce specifically discloses that a viscosity modifier may be added (page 15, lines 18 and 19). Secondly, contrary to appellant's assertion, Pierce clearly discloses that a sizing agent is utilized to make the filaments (paragraph bridging pages 7 and 8).

The appellant asserts that Dong teaches away from increasing the pH because Pierce desires highly dispersed fibers and mats comprising highly dispersed fibers are only produced by limiting the amount of oppositely charged viscosity modifiers. The examiner respectfully disagrees. Dong discloses that highly dispersed fibers may result from limiting the amount of oppositely charged viscosity modified used or by limiting the contact time of the charged and oppositely charged viscosity modifiers prior to removing the water (column 7, lines 26-43).

In response to applicant's argument that Dong is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Dong is in the field of appellant's endeavor which is wet laid methods of making glass fiber mats (see column 1, lines 4-11 of Dong).



The applicant asserts that it is improper to rely on an inherent feature of a combination of references to support an obviousness rejection. The examiner respectfully disagrees. The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong as applied to claims 13-14 and 19-20 above, and further in view of USPN 4,102,785 to Head.

The appellant asserts that apparent density and fiber density are not the same because they are allegedly calculated with different measurements. The examiner respectfully disagrees. Firstly, it is well settled that unsupported arguments are no substitute for objective evidence. *In re Pearson*, 494 F.2d 1399, 1405, 181 USPQ 641, 646 (CCPA 1974). Secondly, the fiber density disclosed by Head is given in grams/cc while the claimed density is also given in grams/cc. Therefore, both refer to the same measure of mass per unit volume.

The appellant asserts that one skilled in the art is incapable of varying the density of a nonwoven material. The examiner respectfully disagrees. Firstly, it is well settled that unsupported arguments are no substitute for objective evidence. *In re Pearson*, 494 F.2d 1399, 1405, 181 USPQ 641, 646 (CCPA 1974). Secondly, the appellant admits that apparent density depends on basis weight (page 19 of appeal brief) and Pierce specifically discloses that basis weight can be altered by varying the average fiber diameter (page 10, lines 18-30).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong as applied to claims 13-14 and 19-20 above, and further in view of USPN 6,749,753 to Yamaguchi.

The appellant repeats previous arguments.

Claims 1-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong in view of USPN 6,420,024 to Perez.

The appellant asserts that Perez cannot be combined with Pierce because Perez relates to polymeric rectangular cross-section fibers while Pierce allegedly only relates to glass round cross-section fibers. The examiner respectfully disagrees. Firstly, it is well settled that unsupported arguments are no substitute for objective evidence. *In re Pearson*, 494 F.2d 1399, 1405, 181 USPQ 641, 646 (CCPA 1974). Pierce does not teach or suggest that the invention is strictly related to fibers with a round cross-sectional shape. Secondly, one skilled in the art is clearly capable of constructing polymeric or glass fibers with a rectangular cross-sectional shape.

In response to applicant's argument that Perez is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both Pierce and Perez relate to filtration (see title of Pierce and column 2, lines 8-21 of Perez).

The applicant asserts that no motivation exists to combine Pierce and Perez. The examiner respectfully disagrees. Pierce is silent with regards to a specific surface area, therefore, it would have been obvious to look to the prior art for conventional surfaces areas. Perez provides this conventional teaching showing that it is known in the filtration art to use a surface area of greater than 0.25 m<sup>2</sup>/g, typically about 0.5 to 30 m<sup>2</sup>/g and that said surface area is advantageous for filtration applications (see column 2, lines 8-21). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the surface area from about 0.5 to 30 m<sup>2</sup>/g, motivated by a desire to increase filtration ability and by the expectation of successfully practicing the invention of Pierce.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong in view of USPN 6,420,024 to Perez as applied to claims 1-17 and 19-20 above, and further in view of USPN 6,749,753 to Yamaguchi.

The appellant repeats previous arguments.

Claims 8-12 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/43850 to Pierce in view of USPN 6,291,552 to Dong in view of USPN 6,420,024 to Perez as applied to claims 1-17 and 19-20 above, and further in view of USPN 4,102,785 to Head.

The appellant repeats previous arguments.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Andrew T Piziali/  
Primary Examiner, Art Unit 1794

Conferees:

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 1794

/Anthony McFarlane/